PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 20402229KC	FOR FURTHER ACTION	See Form PCT/IPEA/416

International application No. PCT/SG2004/000382	International filing date *(day/month/year)* 24 November 2004	Priority date *(day/month/year)* 27 November 2003

International Patent Classification (IPC) or national classification and IPC

Int. Cl.

G06F 19/00 (2006.01)   *G06F 17/30* (2006.01)   *G09B 5/02* (2006.01)

Applicant

AGENCY FOR SCIENCE, TECHNOLOGY AND RESEARCH et al

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 5 sheets, including this cover sheet.

3. This report is also accompanied by ANNEXES, comprising:

   a. [X] *(sent to the applicant and to the International Bureau)* a total of 5 sheets, as follows:

   [X] sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).

   [ ] sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.

   b. [ ] *(sent to the International Bureau only)* a total of (indicate type and number of electronic carrier(s))   , containing a sequence listing and/or table related thereto, in electronic form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).

4. This report contains indications relating to the following items:

   [X] Box No. I   Basis of the report

   [ ] Box No. II   Priority

   [ ] Box No. III   Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

   [ ] Box No. IV   Lack of unity of invention

   [X] Box No. V   Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

   [ ] Box No. VI   Certain documents cited

   [ ] Box No. VII   Certain defects in the international application

   [ ] Box No. VIII   Certain observations on the international application

Date of submission of the demand 27 September 2005	Date of completion of this report 06 March 2006
Name and mailing address of the IPEA/AU AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA E-mail address: pct@ipaustralia.gov.au Facsimile No. (02) 6285 3929	Authorized Officer S KAUL Telephone No. (02) 6283 2182

Form PCT/IPEA/409 (Cover sheet) (April 2005)

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/SG2004/000382

Box No. I	Basis of the report

1. With regard to the language, this report is based on:

   [X] The international application in the language in which it was filed

   [ ] A translation of the international application into _____ , which is the language of a translation furnished for the purposes of:

   - [ ] international search (under Rules 12.3(a) and 23.1 (b))

   - [ ] publication of the international application (under Rule 12.4(a))

   - [ ] international preliminary examination (Rules 55.2(a) and/or 55.3(a))

2. With regard to the elements of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

   [ ] the international application as originally filed/furnished

   [X] the description:

   - pages 1-14 as originally filed/furnished
   - pages* _____ received by this Authority on _____ with the letter of.
   - pages* _____ received by this Authority on _____ with the letter of

   [X] the claims:

   - pages _____ as originally filed/furnished
   - pages* _____ as amended (together with any statement) under Article 19
   - pages* 15-19 received by this Authority on 27 September 2005 with the letter of the same date
   - pages* _____ received by this Authority on _____ with the letter of

   [X] the drawings:

   - pages 1/6-6/6 as originally filed/furnished
   - pages* _____ received by this Authority on _____ with the letter of
   - pages* _____ received by this Authority on _____ with the letter of

   [ ] a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing.

3. [ ] The amendments have resulted in the cancellation of:

   - [ ] the description, pages
   - [ ] the claims, Nos.
   - [ ] the drawings, sheets/figs
   - [ ] the sequence listing *(specify)*:
   - [ ] any table(s) related to the sequence listing *(specify)*:

4. [ ] This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

   - [ ] the description, pages
   - [ ] the claims, Nos.
   - [ ] the drawings, sheets/figs
   - [ ] the sequence listing *(specify)*:
   - [ ] any table(s) related to the sequence listing *(specify)*:

* *If item 4 applies, some or all of those sheets may be marked "superseded."*

Form PCT/IPEA/409 (Box No. I) (April 2005)

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

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Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	**1-18**	**YES**
	Claims	**19-35**	**NO**
Inventive step (IS)	Claims		**YES**
	Claims	**1-35**	**NO**
Industrial applicability (IA)	Claims	**1-35**	**YES**
	Claims		**NO**

2. Citations and explanations (Rule 70.7)

D1: *The RSNA MIRC Authoring Tool MIRCat Release Alpha-4*

D2: A. Rosset et al, *Integration of a Multimedia Teaching and Reference Database in a PACS Environment*

D3: E. Weinberger et al, *MyPACS.net: A Web-Based Teaching File Authoring Tool*

D4: CA 2,244,549 A1 (HENRI et al)

D5: US 2003/0208477 A1 (SMIRNIOTOPOULOS et al)

D6: E. Siegel et al, *Electronic Teaching Files: Seven-Year Experience Using a Commercial Picture Archiving and Communication System*

D7: T. Lim et al, *MIRIP (Medical Image Repository Interface with PACS): A Neuroradiology MIRC Database*, presentation abstract

D8: *The MIRCdocument Schema, Version 8.0*

NOVELTY (N) and INVENTIVE STEP (IS) claims 1-35

Claims 1-18 and 35: These claims lack inventive step in light of D1, D2, D3 and D5. The invention of claim 1 is distinguished from each of these documents only by its use of an anonymisation code to replace each item of patient sensitive information. (All the identified citations discloses the anonymisation of patient data in some form.) While you have argued that this difference constitutes an inventive step because "the feature is not a well known aspect of PACS and MIRC servers," and that "sensitive information is usually encrypted as a whole," I find this argument to be unpersuasive. The use of anonymisation codes cannot be seen to be inventive, since it merely replaces the sensitive data with a random code by which an authorised person may retrieve the sensitive data. Techniques such as this are commonplace in the larger arena of database design, and a person skilled in the art would readily access this knowledge when implementing any of the cited systems. As previously discussed, the claims which depend on claim 1 are seen to lack inventive step when their features are not already disclosed in the cited art.

(Continued in supplemental box.)

Form PCT/IPEA/409 (Box No. V) (April 2005)

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

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Box No. VIII	Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

Claim 19 is not fully supported by the description, since it defines no working inter-relationship between the integers of the claim.

In claim 22, there is not antecedent to "the image server."

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International application No.

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Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of: **Box V, item 2**

Claims 19-35: These claims still lack novelty and/or inventive step in comparison to document D1, which discloses a database (the directory structure containing the teaching files; the "DICOM Store"), an image retrieval interface ("DICOM Q/R Tab"), a MIRC server ("Export Site") and a graphical user interface (screenshots).

Claim 19, at least: This claim is still seen to lack novelty in comparison to D7, which discloses a database ("neurological disease databases"), an image retrieval interface ("Picture Archive and Communications System"), a MIRC server ("MIRC;" the presence of a server is implicit) and a graphic user interface (Windows or other OS on which the system runs).

Claims 19-35: Each of D2, D3 and D5, when combined with D8, discloses all the essential features of the claimed invention. A skilled addressee would readily make the above combinations, since the MIRC schema described in D8 is aimed at standardising systems of the type described in D2-D6. The first group of documents discloses an image retrieval interface (PACS) and personal database for images of various formats, and a graphical user interface; D8 discloses a MIRC server.

Form PCT/IPEA/409 (Supplemental Box)(April 2005)

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The Claims

1. A method for retrieving medical images from various sources and in different formats, to enable the creation of teaching files and research datasets, for the building of a personal medical image library, the method comprising:

   (a) retrieving a plurality of medical images from various sources;

   (b) storing the plurality of medical images in a database;

   (c) generating a database record for the teaching files and research datasets;

   (d) generating the teaching files and research datasets file;

   (e) saving the teaching files and research datasets into the database;

   (f) generating at least one index of the teaching files and research datasets; and

   (g) anonymizing patient sensitive information, the patient sensitive information being able to be revealed to a generator of the teaching files and research datasets;

   wherein the anonymization process includes the replacing of each item of the sensitive information with an anonymization code.

2. A method as claimed in claim 1, further including a searching mechanism for searching the teaching files and research datasets.

3. A method as claimed in claim 1, wherein the medical images are from at least one discipline selected from the group consisting of: radiology, nuclear medicine, dermatology, pathology, ophthalmology, cardiology, neurology, endoscopy, angiography, biomedicine, ECG, EEG, and EMG.

4. A method as claimed in claim 1, wherein the method is in accordance with MIRC schema.

5. A method as claimed in claim 1, wherein the patient sensitive information is not revealed publicly.

6. A method as claimed in claim 1, wherein the anonymization code includes a prefix, a randomly generated number and a type.

7. A method as claimed in claim 6, wherein the prefix is a short string of characters representing the generator of the sensitive information; and the type represents nature of the sensitive information.

8. A method as claimed in claim 1, wherein a check is first performed to determine if the item of sensitive information has previously been anonymized and the anonymization code previously generated; and, if yes, retrieving and using the previously generated anonymization code.

9. A method as claimed in claim 1, wherein the sensitive information includes one or more items selected from the group consisting of: patient's name, patient ID, other patient's names, other patient IDs, patient's birth name, patient's address, patient's telephone numbers, patient's mother's birth name, region of residence, country of residence, military rank, branch of service, patient comments, additional patient history, referring physician's name, referring physician's address, referring physician's telephone numbers, and all other person names.

10. A method as claimed in claim 1, wherein, in step (c), ACR codes are entered as a result of system prompts.

11. A method as claimed in claim 10, wherein the ACR codes are used for the at least one index of the teaching files.

12. A method as claimed in claim 1, wherein indexing is by at least one selected from the group consisting of: title, abstract, keywords, authors, affiliations, contacts, patient information, radiological codes, image format, image compression status, image modality, anatomic location, and ACR codes.

13. A method as claimed in claim 2, wherein, for internal searching, patient sensitive information is revealed, and for external searching patient sensitive information is anonymized.

14. A method as claimed in claim 1, wherein after each medical image is retrieved in step (a) it can be viewed before being stored.

15. A method as claimed in claim 1, wherein all medical images are kept in their original format once retrieved.

16. A method as claimed in claim 15, wherein the formats include at least one selected from the group consisting of: AVW, HDR/IMG (Analyze format: version 8.0 and 7.5), BMP (Windows Bitmap format), DICOM (Digital Imaging and Communications in Medicine),

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GIF, JPEG, JPEG 2000, PNG, PNM, PPG, RGB, RGBA, SGI, TIFF, AVW, HDR/IMG (Analyze format: version 8.0 and 7.5), Animated GIF, MIRA, Muti-sliced TIFF, MOV, AVI, MP3, RM, and Waveform for ECG, EEG, EMG

17. A method as claimed in claim 16, wherein for two-dimensional medical images, two additional JPEG images are generated for ease of browsing using a web browser; and for other image formats, an additional thumbnail image may be generated.

18. A method as claimed in claim 17, wherein the two additional JPEG images are of the same size as thumbnail images.

19. Apparatus for retrieving medical images from various sources and in various formats for creating at least one teaching file and research dataset; the apparatus including a database, an image retrieval interface able to retrieve medical images from various sources and in different formats, an MIRC server, a server, and a graphic user interface for operation on a user's machine.

20. Apparatus as claimed in claim 19, wherein the database is a relational database for storage of all required information, including: database tables; database indexes; database scripts; and pointers to the medical images, teaching files and research datasets.

21. Apparatus as claimed in claim 19, wherein the server serves requests received from a user via the graphic user interface on a user's machine; the graphic user interface being for providing access functions and file editing functions.

22. Apparatus as claimed in claim 19, wherein the image server includes at least one selected from the group consisting of: a two dimensional image loader, a three dimensional image loader, a multi-media loader and a telemetry loader.

23. Apparatus as claimed in claim 22, wherein the two-dimensional image loader is for retrieving two-dimensional still images.

24. Apparatus as claimed in claim 22, wherein the three-dimensional image loader is for retrieving three-dimensional still images.

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25. Apparatus as claimed in claim 22, wherein the multi-media loader is for retrieving multi-media files.

26. Apparatus as claimed in claim 22, wherein the telemetry loader is for retrieving telemetry data.

27. Apparatus as claimed in claim 19, wherein the graphic user interface includes a PMIL client as a user interface able to run in a web browser or as a stand alone application on a user's machine, and provides MRIC editing functions.

28. Apparatus as claimed in claim 19, wherein the server includes an MIRC storage for providing an MIRC file storage service for the database and for the user's machine.

29. Apparatus as claimed in claim 28, wherein the MIRC server further includes an MIRC query to provide queries as defined by the MIRC scheme.

30. Apparatus as claimed in claim 19, wherein the at least one teaching file is in accordance with a Medical Imaging Resource Centre standard.

31. Apparatus as claimed in claim 19, wherein the formats include at least one selected from the group consisting of: AVW, HDR/IMG (Analyze format: version 8.0 and 7.5), BMP (Windows Bitmap format), DICOM (Digital Imaging and Communications in Medicine), GIF, JPEG, JPEG 2000, PNG, PNM, PPG, RGB, RGBA, SGI, TIFF, AVW, HDR/IMG (Analyze format: version 8.0 and 7.5), Animated GIF, MIRA, Muti-sliced TIFF, MOV, AVI, MP3, RM, and Waveform for ECG, EEG, EMG.

32. Apparatus as claimed in claim 19, wherein all medical images are kept in their original format once retrieved.

33. A method as claimed in claim 31, wherein for two-dimensional medical images, two additional JPEG images are generated for ease of browsing using a web browser; and for other image formats, an additional thumbnail image may be generated.

34. A method as claimed in claim 33, wherein the two additional JPEG images are of the same size as thumbnail images.

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35.   Computer useable medium comprising a computer program code that is configured to cause a processor to execute one or more functions to perform the method of claim 1.